
Instruction Manual

Model SC25F
pH SENCOM™ sensor



(BG)

Всички улътвания за продукти от серията ATEX Ex се предлагат на английски език. Ако се нуждаете от улътвания за продукти от серията Ex на родния ви език, се свържете с най-близкия офис или представителство на фирма Yokogawa.

(CZ)

Všechny uživatelské příručky pro výrobky, na něž se vztahuje nevybušné schválení ATEX Ex, jsou dostupné v angličtině. Požadujete-li pokyny týkající se výrobků s nevybušným schválením ve vašem lokálním jazyku, kontaktujte prosím vaši nejbližší reprezentační kancelář Yokogawa.

(D)

Alle Betriebsanleitungen für ATEX Ex bezogene Produkte stehen in den Sprachen Englisch. Sollten Sie die Betriebsanleitungen für Ex-Produkte in Ihrer Landessprache benötigen, setzen Sie sich bitte mit Ihrem örtlichem Yokogawa-Vertreter in Verbindung.

(DK)

Alle brugervejledninger for produkter relateret til CE er tilgængelige på engelsk. Skulle De ønske yderligere oplysninger om håndtering af CE produkter på eget sprog, kan De rette henvendelse herom til den nærmeste Yokogawa afdeling eller forhandler.

(EST)

Kõik ATEX Ex toodete kasutamishendid on esitatud inglise keeles. Ex seadmete muukeelse dokumentatsiooni saamiseks pöörduge lähima lokagava (Yokogawa) kontori või esindaja poole.

(E)

Todos los manuales de instrucciones para los productos antiexplosivos de ATEX están disponibles en inglés. Si desea solicitar las instrucciones de estos artículos antiexplosivos en su idioma local, deberá ponerse en contacto con la oficina o el representante de Yokogawa más cercano.

(F)

Tous les manuels d'instruction des produits ATEX Ex sont disponibles en langue anglaise. Si vous nécessitez des instructions relatives aux produits Ex dans votre langue, veuillez bien contacter votre représentant Yokogawa le plus proche.

(GB)

All instruction manuals for ATEX Ex related products are available in English. Should you require Ex related instructions in your local language, you are to contact your nearest Yokogawa office or representative.

(GR)

Όλα τα εγχειρίδια λειτουργίας των προϊόντων με ATEX Ex διατίθενται στα Αγγλικά. Σε περίπτωση που χρειάζεστε οδηγίες σχετικά με Ex στην τοπική γλώσσα παρακαλούμε επικοινωνήστε με το πλησιέστερο γραφείο της Yokogawa ή αντιπροσωπο της.

(H)

Az ATEX Ex műszerek gépkönyveit angol nyelven adjuk ki. Amennyiben helyi nyelven kéri az Ex eszközök leírásait, kérjük keressék fel a legközelebbi Yokogawa irodát, vagy képviselőt.

(I)

Tutti i manuali operativi di prodotti ATEX contrassegnati con Ex sono disponibili in inglese. Se si desidera ricevere i manuali operativi di prodotti Ex in lingua locale, mettersi in contatto con l'ufficio Yokogawa più vicino o con un rappresentante.

(LV)

Visas ATEX Ex kategorijas izstrādājumu Lietošanas instrukcijas tiek piegādātas angļu valodās. Ja vēlaties saņemt Ex ierīšu dokumentāciju citā valodā, Jums ir jāsazinās ar firmas Jokogava (Yokogawa) tuvāko ofisu vai pārstāvi.

(LT)

Visos gaminiø ATEX Ex kategorijos Eksploatavimo instrukcijos teikiami anglø kalbomis. Norëdami gauti priestaisø Ex dokumentacijà kitomis kalbomis susisiekite su artimiausiu bendrovës Yokogawa biuru arba atstovu.

(M)

Il-manwali kollha ta' l-istruzzjonijiet għal prodotti marbuta ma' ATEX Ex huma disponibbli bl-Ingliż. Jekk tkun teħtiegħ struzzjonijiet marbuta ma' Ex fil-lingwa lokali tiegħek, għandek tikkuntattja lill-eqreb rappreżentant jew ufficiju ta' Yokogawa.

(NL)

Alle handleidingen voor producten die te maken hebben met ATEX explosiebeveiliging (Ex) zijn verkrijgbaar in het Engels. Neem, indien u aanwijzingen op het gebied van explosiebeveiliging nodig hebt in uw eigen taal, contact op met de dichtstbijzijnde vestiging van Yokogawa of met een vertegenwoordiger.

(P)

Todos os manuais de instruções referentes aos produtos Ex da ATEX estão disponíveis em Inglês. Se necessitar de instruções na sua língua relacionadas com produtos Ex, deverá entrar em contacto com a delegação mais próxima ou com um representante da Yokogawa.

(PL)

Wszystkie instrukcje obsługi dla urządzeń w wykonaniu przeciwybuchowym Ex, zgodnych z wymaganiami ATEX, dostępne są w języku angielskim. Jeżeli wymagana jest instrukcja obsługi w Państwa lokalnym języku, prosimy o kontakt z najbliższym biurem Yokogawy.

(RO)

Toate manualele de instructiuni pentru produsele ATEX Ex sunt in limba engleza. In cazul in care doriti instructiunile in limba locala, trebuie sa contactati cel mai apropiat birou sau reprezentant Yokogawa.

(S)

Alla instruktionsböcker för ATEX Ex (explosionssäkra) produkter är tillgängliga på engelska. Om Ni behöver instruktioner för dessa explosionssäkra produkter på annat språk, skall Ni kontakta närmaste Yokogawakontor eller representant.

(SF)

Kaikkien ATEX Ex-tyyppisten tuotteiden käyttöohjeet ovat saatavilla englannin-. Mikäli tarvitsette Ex-tyyppisten tuotteiden ohjeita omalla paikallisella kielellänne, ottakaa yhteyttä lähimpään Yokogawa-toimistoon tai -edustajaan.

(SK)

Všetky návody na obsluhu pre prístroje s ATEX Ex sú k dispozícii v jazyku anglickom. V prípade potreby návodu pre Ex-prístroje vo Vašom národnom jazyku, skontaktujte prosím miestnu kanceláriu firmy Yokogawa.

(SLO)

Vsi predpisi in navodila za AEX Ex sorodni pridelki so pri roki v anglišèini. Èe so Ex sorodna navodila potrebna v vašem tukejnem jeziku, kontaktirajte vaš najbliži Yokogawa office ili predstavnika.

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1. PREFACE

1.1 Introduction

This instruction manual provides information for the installation and use of the SC25F SENCOM™ sensor. This digital sensor shows how Yokogawa applies the motto “Simply the Best” to sensor technology. Setup of the sensor is very easy because all sensor specific characteristics, such as calibration data, are stored in the sensor. The SC25F SENCOM™ sensor holds four separate measuring elements:

- pH glass electrode.
- Long life saturated Ag/AgCl reference system.
- Integral Pt1000 element for accurate temperature measurements.
- Solid Titanium LE electrode for accurate pH measurements.

Other valuable features of the sensor:

- PTFE reference diaphragm to prevent fouling.
- Polymerized electrolyte to extend the sensor lifetime.
- Available in different versions, a G-glass version for general purpose applications, and a L-glass version for harsh applications and high process temperatures. Both the G-glass as the L-glass version are available in two different lengths, 120 mm and 225 mm.
- Versatile in-line, immersion or off-line installation.

Optional quick-removal adapters in both stainless steel and titanium are available to make calibration and maintenance even easier.

The SC25F is provided with a multipole M9 male connector for connection to the Yokogawa FLXA analyzer using the WU11 interconnection cable for SENCOM™ sensors. This cable, available in 4 fixed lengths, is specified for reliable transfer of digital signals and especially designed to be installed in a heavy industrial environment. The double shielded cable will protect both the sensor and the analyzer for interference

from high voltages and currents which are present on other cables.

1.2 Unpacking and Checking

Upon delivery, unpack the sensor carefully and inspect it to ensure that it is not damaged during shipment. If damage is found, retain the original packing material and immediately notify the carrier and the relevant local Yokogawa Sales Office. Make sure the Model Code and Serial Number on the sensor are the same as on the packing list. Also check if option(s) that were ordered, are included and correct.

1.3 Warranty and Service

Yokogawa products are guaranteed free from defects in workmanship and materials under normal use and service for a period of (typically) 12 months from the date of shipment from the manufacturer. Individual Sales organizations can deviate from the typical warranty period, and the conditions of sale relating to the original purchase order should be consulted. Damage caused by wear and tear, inadequate maintenance, corrosion, or by the effects of chemical processes is excluded from this warranty coverage. In the event of a warranty claim, the defective goods should be sent (freight paid) to the Service Department of the relevant Yokogawa Sales office for repair or replacement (at Yokogawa’s discretion).

The following information must be included in the letter accompanying the returned goods:

- Model Code and Serial Number.
- Original Purchase Order and Date.
- Length of time in service and description of the process.
- Description of the fault and circumstances of the failure.
- Process/environmental conditions that may be related to the failure of the sensor.
- Statement as to whether warranty or non-warranty service is requested.
- Complete shipping and billing instructions for return of material, plus the name and

phone number of a contact person that can be reached for further information.

- Clean Statement

Returned goods that have been in contact with process fluids must be decontaminated and disinfected prior to shipment. Goods should carry a certificate to this effect, for the health and safety of our employees. Material Safety Data sheets must be included for all components of the process to which the sensor(option) have been exposed.

1.4 Serial Number definition

The Serial Number is defined by nine (9) alphanumeric characters:

X₁X₂ Production Location
 X₃X₄ Year/Month code
 X₅X₆X₇X₈X₉ Tracking number

Example: N1B600028

Table 1:

Production year according to DIN. IEC 60062

Year	Year code	Year	Year code
2010	A	2023	R
2011	B	2024	S
2012	C	2025	T
2013	D	2026	U
2014	E	2027	V
2015	F	2028	W
2016	H	2029	X
2017	J	2030	A
2018	K	2031	B
2019	L	2032	C
2020	M	2033	D
2021	N	2034	E
2022	P	2035	F

Table 2:

Production month code according to DIN. IEC 60062

Month	Month code
January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	O
November	N
December	D

2. GENERAL SPECIFICATIONS

2.1 Measuring elements : pH glass electrode
 : Silver Chloride reference
 : Solid Titanium electrode
 : Pt1000 temperature sensor

2.2 Wetted parts

Sensor body : Glass, PPS
 Measuring sensor : G-glass or L-glass
 Reference junction : Porous PTFE
 Earth pin : Solid Titanium
 O-ring : FKM (Viton)

2.3 Functional specifications (at 25°C)

Measuring system

Isothermal point : pH 7
 Reference system : Ag/AgCl with saturated KCl
 Glass impedance - G-glass : 400 M Ω nominal
 - L-glass : 775 M Ω nominal
 Liquid outlet : Non-flow junction
 Junction resistance : < 10 k Ω
 Temperature element : Pt1000 to IEC 751
 Asymmetry potential(zer) : 8 ± 15 mV
 Slope : > 96 % (of theoretical value)

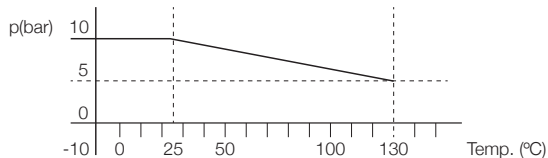
Note: The SC25F temperature sensor is designed for cell compensation and for indication.
 It is **NOT** designed for process temperature control.

2.4 Dynamic specifications

Startup time sensor : < 60 sec.
 Response time pH : $t_{90} < 15$ sec. (for 7 to 4 pH step at 25 °C)
 Response time temperature : $t_{90} < 1.5$ min. (for 10 °C step)
 Stabilization time pH : < 2 min. (for 0.02 pH unit during 10 sec.)

2.5 Operating range

pH* : 0 to 14
 Temperature** - G-glass : -10 °C to 80 °C (14 °F to 176 °F)
 - L-glass : +15 °C to 125 °C (59 °F to 257 °F)
 Pressure (static) *** :



Conductivity : > 10 μ S/cm

Note* : The pH operating range is 0-14 pH, but using the sensor at temperature- and / or pH-extremes will seriously shorten the lifetime.

Note** : The operating temperature for sensor in combination with PR10 retractable fitting is limited to 80 °C

Note*** : Process pressure fluctuations will shorten the lifetime of the sensor

2.6 Transmission signal (Data + and Data -)

General	: Bi-directional digital communication (RS 485) with limited MODBUS support
Data rate	: 9600 b/s (8,E,1)
Output function	: pH or temperature compensated pH Temperature Junction resistance Sensor details (Model, Serial Number, production date) Sensor calibration data (zero, slope, temperature offset) Sensor status signals (e.g. Glass impedance detection)

Note: The output functions and settings of the sensor are accessible using a dedicated device such as the Yokogawa FLXA analyzer.

2.7 Power supply (Supply+ versus Supply Gnd)

Operating range	: +2.7 to +3.6 VDC
Power consumption	: ≤ 20 mW

Pin #	Signal description
1	Data -
2	Data +
3	Supply +
4	Shield
5	Supply Gnd

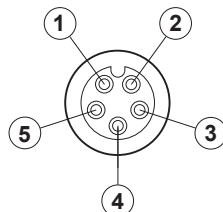


Fig 1: Sensor connector (front view) with gold plated contacts

2.8 Regulatory standards

CE	: Decision 768/2008/EC		
- ATEX	: Directive 94/9/EC, as amended by Regulation (EC) no. 1882/2003		
Certificate no.	: DEKRA 11ATEX0064 X for	II	1 G Ex ia IIC T3...T6 Ga
Electrical data	: For sensor input circuits (by connector) connected to a certified intrinsically safe circuit with the following maximum values $U_i = 6.1 \text{ V}$; $I_i = 230 \text{ mA}$; $P_i = 1.2 \text{ W}$; $L_i = 4 \text{ } \mu\text{H}$; $C_i = 30 \text{ } \mu\text{F}$ or Certified intrinsically safe Yokogawa transmitter Model FLXA21.		
Special conditions (X)	: T6 for Tamb. -40 °C to +60 °C T5 for Tamb. -40 °C to +75 °C T4 for Tamb. -40 °C to +110 °C T3 for Tamb. -40 °C to +125 °C Electrostatic charges on the sensor enclosure shall be avoided.		
- Pressure	: Directive 97/23/EC, as amended by Regulation (EC) no. 1882/2003		
Applying article	: 3.3 (Sound Engineering Practice)		
		Damaging the screw thread of the sensor might influence the maximum process pressure.	
- EMC	: Directive 2004/108/EC IEC 61326-1: 2005 Class A (control and laboratory use) IEC 61326-1: 2005 (use in industrial locations)		
- Low Voltage	: Directive 2006/95/EC		
		Sensor contains glass parts which if broken can cause cutting injuries.	
- WEEE	: Directive 2012/19/EU		
- RoHS	: Directive 2011/65/EU		

IECEX

Applying standards	: IEC 60079-0: 2007; IEC 60079-11: 2006; IEC 60079-26: 2006
Certificate no.	: IECEX DEK 11.0065X for Ex ia IIC T3...T6 Ga

CSA

- Certificate no. : 2516979
- Master contract no. : 182892
- Electrical data : IS, Class I Div. 1, GP A, B, C, D T3...T6
: For sensor input circuits (by connector), connected to a certified intrinsically safe circuit, with the following maximum values:
 - U_i = 6.1 V; I_i = 230 mA; P_i = 1.2 W; L_i = 4 μH; C_i = 30 μF
 - or
 - Certified intrinsically safe Yokogawa transmitter Model FLXA21 series.
- Ambient temperature : T6 for Tamb. -40 °C to +60 °C
 - T5 for Tamb. -40 °C to +75 °C
 - T4 for Tamb. -40 °C to +110 °C
 - T3 for Tamb. -40 °C to +125 °C

Note: Intrinsically safe when connected as per Control Drawing FF1-K1224QV (see Fig 2)

Control Drawing CSA

The SC25F SENCOM™ sensor shall be installed to a certified intrinsically safe circuit meeting the entity parameters of the sensor as shown in the table as maximum values, or to a certified intrinsically safe Yokogawa transmitter Model FLXA21 series.

When installing this equipment, follow the manufacturer’s control drawing. Installation should be in accordance with Canadian Electrical Code, Part 1 or CEC, Part 1.



WARNING

To prevent ignition of flammable or or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer’s live maintenance procedures.

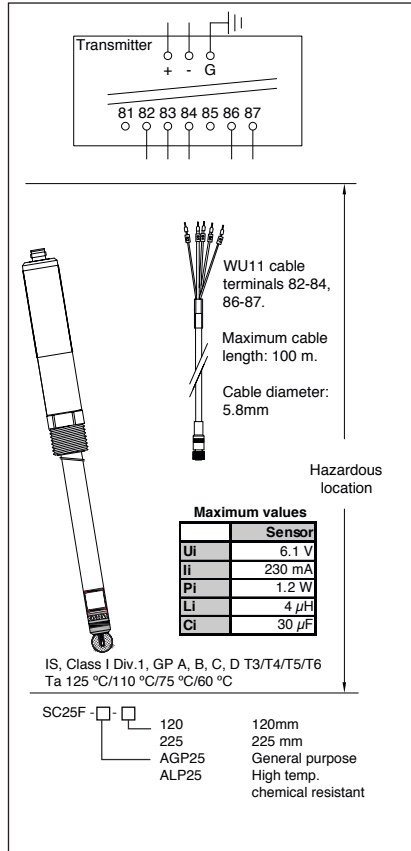


Fig 2: FF1-K1224QV Control drawing CSA

FM

- Certificate no. : 3046277
IS, CL I Div. 1, GP A, B, C, D T3...T6
- Electrical data : For sensor input circuits (by connector), connected to a FM approved intrinsically safe apparatus meeting the entity parameters of the SENCOTM sensor:
 $U_i = 6.1\text{ V}$; $I_i = 230\text{ mA}$; $P_i = 1.2\text{ W}$; $L_i = 4\text{ }\mu\text{H}$; $C_i = 30\text{ }\mu\text{F}$
 or
 FM approved intrinsically safe Yokogawa transmitter Model FLXA21 series.
- Ambient temperature: T6 for Tamb. $-40\text{ }^\circ\text{C}$ to $+60\text{ }^\circ\text{C}$
 T5 for Tamb. $-40\text{ }^\circ\text{C}$ to $+75\text{ }^\circ\text{C}$
 T4 for Tamb. $-40\text{ }^\circ\text{C}$ to $+85\text{ }^\circ\text{C}$
 T3 for Tamb. $-40\text{ }^\circ\text{C}$ to $+85\text{ }^\circ\text{C}$

Note: Intrinsically safe when connected as per Control Drawing FF1-K1224QT (see Fig 3)

Control Drawing FM

The SC25F SENCOTM sensor shall be installed to a FM approved intrinsically safe apparatus meeting the entity parameters of the sensor as shown in the table as maximum values, or to a FM certified intrinsically safe Yokogawa transmitter Model FLXA21 series.

When installing this equipment, follow the manufacturer’s control drawing. Installation should be in accordance with ANSI/ISA RP 12.06.01 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electrical Code (ANSI/NFPA 70).



WARNING

To prevent ignition of flammable or or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer’s live maintenance procedures.

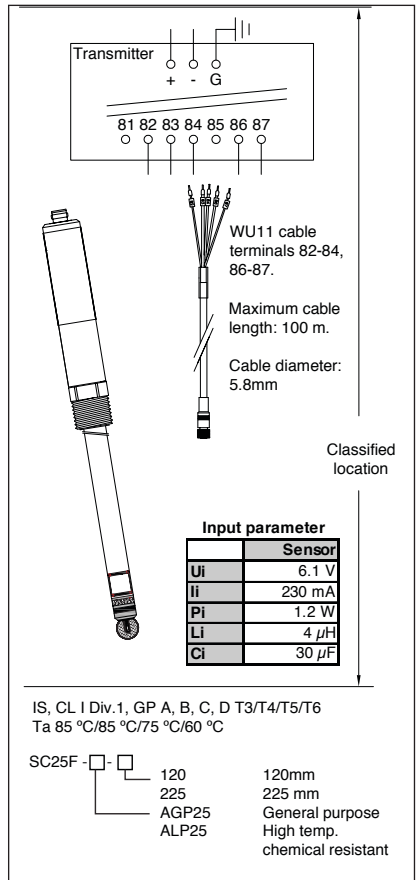


Fig 3: FF1-K1224QT Control drawing FM

Note: When the sensor has been connected to not intrinsically safe equipment which exceeds the restrictions regarding the sensor input circuit (see electrical data), the sensor is not suitable anymore for intrinsically safe use.

2.9 Shipping details

Package size (L x W x H) : 120mm version: 300 x 100 x 75 mm (11.8 x 3.9 x 3.0 inch)

225 mm version: 435 x 60 x 60 mm (17.1 x 2.4 x 2.4 inch)

Package weight : app. 0.25 kg (0.55 lbs)

2.10 Environment and operational conditions

Storage temperature : -10 °C to 50 °C (14 °F to 122 °F)

Sensor connection : Hot swapping possible

Water proof : IP67 (conform IEC 60529)

3 INSTALLATION OF SC25F

For optimum measurement results, the SC25F should be installed in a location that offers an acceptable representation of the process composition and **DOES NOT** exceed the specifications of the sensor. The SC25F is designed with PG13.5 threaded connection to allow installation in a wide variety of applications.

3.1 Typical installation

The SC25F sensor is designed for versatile in-line, immersion or off-line installation. For best results the SC25F should be mounted with the process flow coming towards the sensor, and positioned at least 15° above the horizontal plane to eliminate air bubbles in the pH glass bulb (see Figure 4).

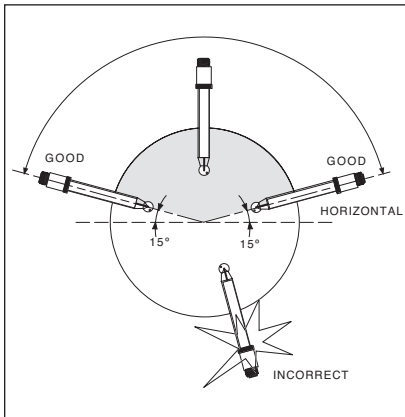


Fig 4: Mounting positions of sensor

3.2 Preparing the sensor for use

Remove the sensor from its shipping box and slide off the so-called 'wet pocket', the tube filled with solution to prevent drying out of the measuring elements during shipment or storage. During shipment, electrolyte in the sensor could be dislocated. To correct this, place the sensor upright for 24 hours. Before installing the sensor in the process it should be calibrated. A general calibration procedure is described in Section 6 of this Instruction Manual.

3.3 Mounting the sensor

The simplest mounting is to use the PG13.5 threaded connection of the sensor. The sensor is standard with a slide ring (Ryton) and an O-ring (Silicon) for direct mounting in a fitting provided with PG13.5 thread (see Figure 5). Other O-ring materials are available as a spare part (see Section 8 of this Instruction Manual).

Note: When sensor is installed in a fitting which is already provided with a spacer for the sensor, remove the pre-installed slide ring and O-ring and follow the installation instructions of the fitting.

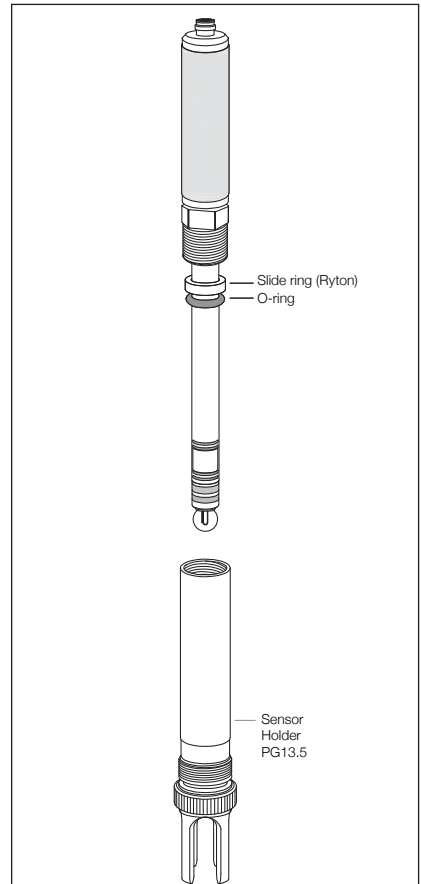


Fig 5: Simple mounting of sensor in PR10 retractable fitting

Note: Mounting the sensor in fittings where the sealing is situated nearby the sensortip, uncorrect placement of the sensor will damage the measuring glass elements. Please handle with care.

Note: First install the sensor in the adapter before it is mounted in the fitting.

The SC25F sensor can also be mounted in other fittings using a quick-removal adapter. These adapters are available as a spare part and ordering information of these parts is given in Section 8 of this Instruction Manual. For a detailed description of these adapters see Section 4.

Examples of mounting the SC25F sensor using an adapter are given in Figures 6, 7, 8 and 9.

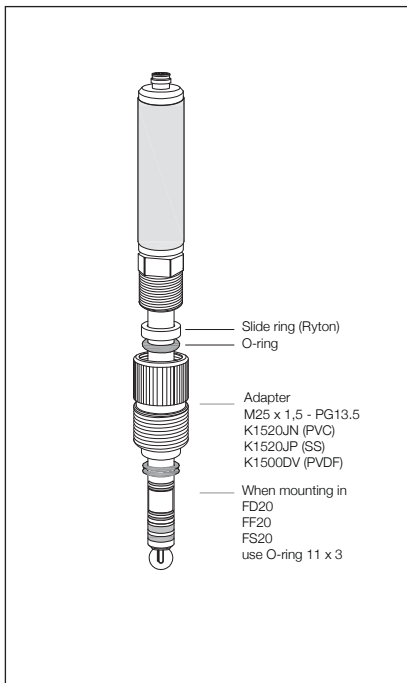


Fig 6: Mounting of sensor in FD20/FF20/FS20 fitting using M25x1.5 adapter K1500DV/ K1520JN / K1520JP

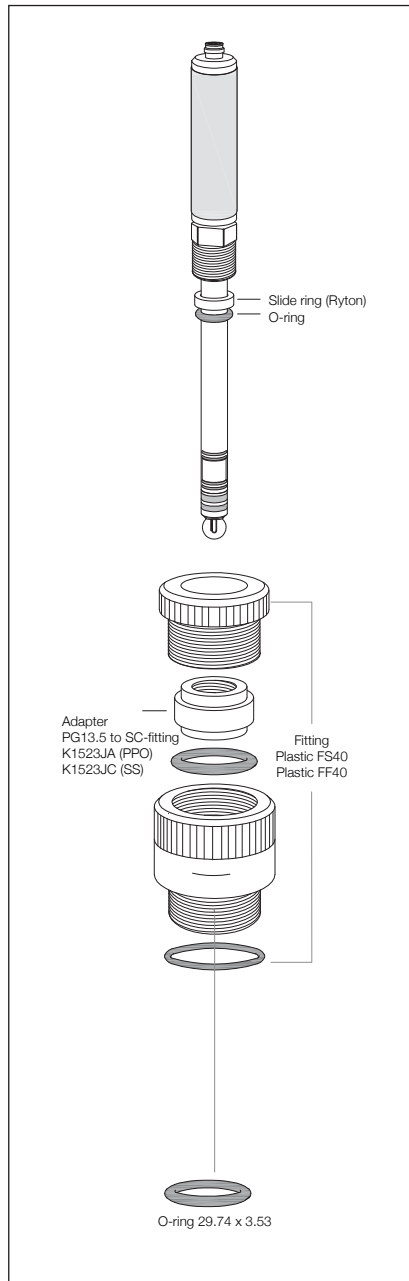


Fig 7: Mounting of sensor in plastic FS40 / FF40 fitting, using adapter K1523JA / K1523JC

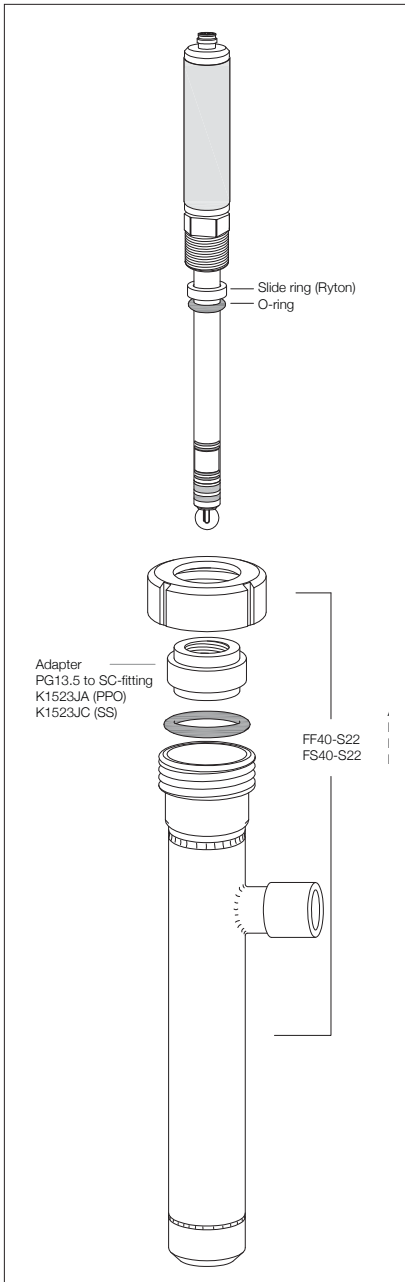


Fig 8: Mounting of sensor in metal FF40 fitting, using adapter K1523JA / K1523JC

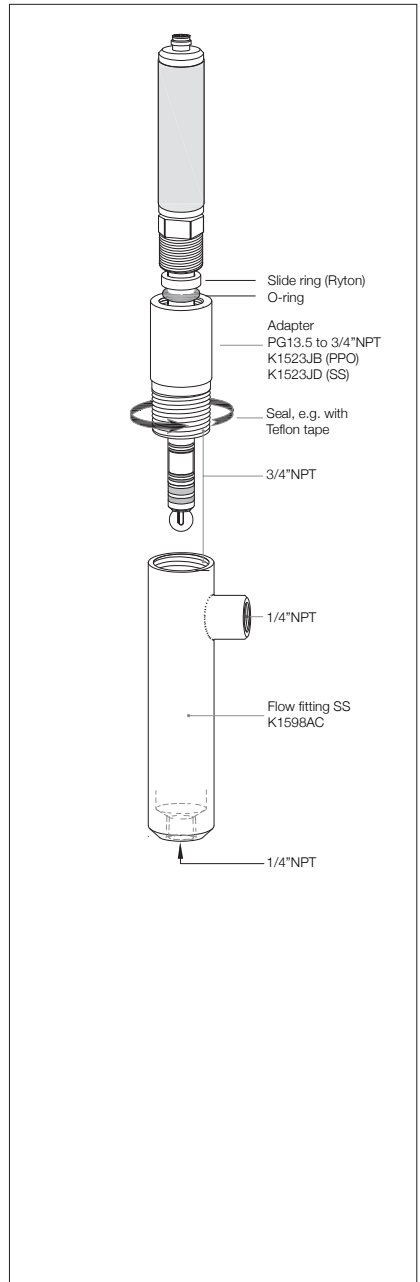


Fig 9: Mounting of sensor in fitting K1598AC, using adapter K1523JB / K1523JD

4 DIMENSIONS

Dimensions in mm

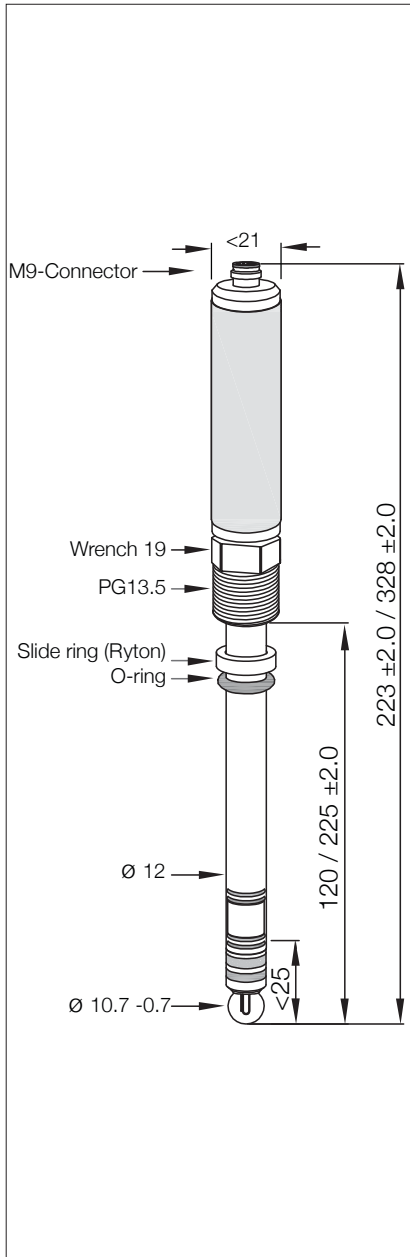
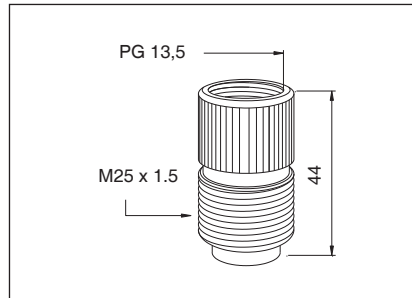
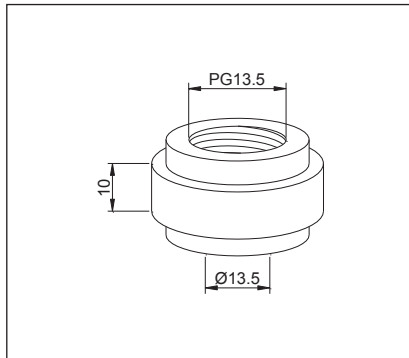


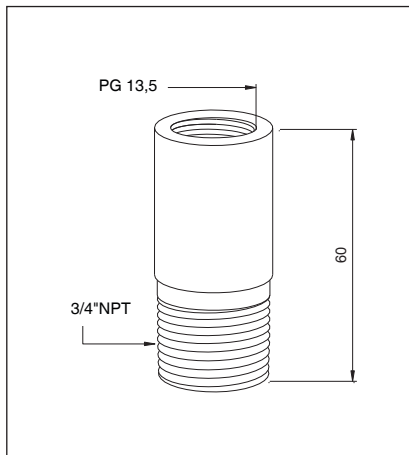
Fig 10: Dimensions SC25F Sensor



**Fig 11: Dimensions adapters
K1500DV, K1520JN, K1520JP**



**Fig 12: Dimensions adapters
K1523JA, K1523JC**



**Fig 13: Dimensions adapters
K1523JB, K1523JD**

5. WIRING

The SC25F is provided with a multipole M9 male connector for connection to the Yokogawa FLXA analyzer using the WU11 interconnection cable for SENCOM™ sensors. The connections of this M9 male connector (see Section 2.7 for details), the WU11 interconnection cable and the FLXA terminal strip are given in Table 3.

Table 3: Definition M9 sensor connector pin to WU11 cable and FLXA analyzer

M9 Pin #	WU11 wire #	WU11 wire color	FLXA terminal #	Signal description
1	83	Yellow	83	Data -
2	84	Green	84	Data +
3	87	Brown	87	Supply +
4	82	Black	82	Shield
5	86	White	86	Supply Gnd

6. GENERAL CALIBRATION & MAINTENANCE PROCEDURE

Calibration of the SC25F pH SENCOM™ sensor can be done on site with the FLXA analyzer connected, or in the laboratory with another FLXA analyzer or with the dedicated Yokogawa SENCOM™ PC software, model SPS24. When using another FLXA analyzer, it has to be set correctly for each calibration. Refer to the FLXA analyzer Instruction Manual for details. After calibration all data will be stored in the sensor itself.

If the sensor is reconnected to the FLXA analyzer in the field, the calibration data of the sensor is automatically read by the analyzer.

6.1 Calibration for pH measurement

To calibrate the SC25F pH SENCOM™ sensor, two buffer solutions with known pH values are required. It is recommended that one buffer solution has a value near to pH 7.00. Depending on the process value to be measured, the second buffer solution should be either acidic (below pH 7.00) or alkaline (above pH 7.00). Normally the IEC buffers (pH 4.01, 6.87 and 9.18) are used.

The following is a very general 2-point calibration procedure:

1. Clean the sensor using a 5% solution of HCl;
2. Rinse sensor thoroughly with demineralized water;
3. Immerse the sensor in the first buffer (pH 6.87 is recommended) and execute calibration as described in the instruction manual of the analyzer or SPS24 PC software;
4. Rinse sensor thoroughly with demineralized water;
5. Immerse the sensor in the second buffer (pH 4.01 or 9.18 is recommended) and execute calibration as described in the instruction manual of the analyzer or SPS24 PC software;
6. Rinse sensor thoroughly with demineralized water.

During calibration, the temperature compensation should be active. The FLXA analyzer automatically compensates for the sensitivity change of the pH sensor at different temperatures.

After calibration, replace or re-install the sensor into the process.

6.2 Maintenance of the SC25F sensor

A pH sensor requires routine maintenance to keep the measuring elements clean and functioning. Depending on the process, different cleaning solutions may be required.



Avoid cleaning the complete sensor with solution. Some cleaning solutions will damage the modelcode sticker and connector which are placed on the electronic housing on top of the sensor. Only clean the measuring elements at the bottom side of the sensor.

In most cases cleaning with water, iso-propanol or methanol is sufficient. In other cases the measuring elements of the sensor have to be cleaned with specific solutions.

Examples:

1. Deposits of limes, hydroxides or carbonates can be removed by immersing the bottom part of the sensor in a solution containing dilute hydrochloric acid (5% is recommended). Afterwards rinse the sensor with water.
2. Deposits of oil and fat can be removed with hot water with a detergent. When the results are unsatisfactory, a mild (carbonate based) abrasive can be used.
3. Protein deposits should be removed with a protein enzymatic solution, for instance a solution containing 8.5 mL concentrated hydrochloric acid and 10 grams of pepsin in 1 liter of water.

Note: Avoid cleaning with non-polar solvent like tri-chloro ethylene, toluene or hexane. The non-polar solvents will break up the gel-layer on the pH glass bulb and requires that the sensor has to be soaked in water for at least 12 hours before it will function again.

The Teflon diaphragm of the sensor can be regenerated by putting it in hot ($\pm 70^{\circ}\text{C}$, 158°F) 3 molar Potassium Chloride (KCl) solution and letting it cool down to room temperature. This procedure clears the diaphragm and will soak the diaphragm with conductive KCl again.

7. MODEL CODE

Model Code	Suffix Code	Option	Description
SC25F			SENCOM™ pH Sensor: pH, REF, LE, Temp.
sensor type	- AGP25		General purpose model
	- ALP25		High temp. chemical resistant model
sensor length	-120		120mm
	-225		225mm

8. SPARE PARTS

	O-rings
K1500BV	O-ring set (6 pcs.), 11x3 mm, EPDM
K1500BZ	O-ring set (6 pcs.), 11x3 mm, Viton
K1500GR	O-ring set (8 pcs.), 11x3 mm, Silicon
K1524AA	O-ring 11x3 mm (Silicon) and Slide ring (Ryton)

	Connection equipment
BA10	Junction box for SENCOM™ Sensor
WU11-M9-xx-WP-V	Interconnection Cable for SENCOM™ Sensor, available lengths xx (03, 05, 10, 20 meter)

	Buffer solutions
K1520BA	Buffer solutions pH 4.01, pH 6.87, pH 9.18 (500 ml each)
K1520BB	Buffer solution pH 1.68 (500 ml)
K1520BC	Buffer solution pH 4.01 (500 ml)
K1520BD	Buffer solution pH 6.87 (500 ml)
K1520BE	Buffer solution pH 9.18 (500 ml)

	Adapters
K1500DV	Adapter, PG13.5 to M25x1.5, PVDF
K1520JN	Adapter, PG13.5 to M25x1.5, PVC
K1520JP	Adapter, PG13.5 to M25x1.5, Stainless Steel
K1523JA	Adapter, PG13.5 to FF40/FS40 fitting, PPO (Noryl)
K1523JB	Adapter, PG13.5 to ¾"NPT, PPO (Noryl)
K1523JC	Adapter, PG13.5 to FF40/FS40 fitting, Stainless Steel
K1523JD	Adapter, PG13.5 to ¾"NPT, Stainless Steel

	Fittings
K1598AC ¹⁾	Flow fitting (incl. 3.1 certificate), Stainless Steel

Note¹⁾: Adapter K1523JB or K1523JD needed to fit the sensor.

9. EU DECLARATION OF CONFORMITY

YOKOGAWA ◆

EU DECLARATION OF CONFORMITY

We: **Yokogawa Europe B.V.**
Euroweg 2
3825 HD Amersfoort
The Netherlands

herewith declare under our sole responsibility that the product, model: **SC25F**
 further specified with model suffix- and option codes: **As listed in Annex-1 in this document**
 is manufactured in accordance with the requirements for CE-marking of products as stated in EC Decision:

768/2008/EC on a common framework for the marketing of products

by applying the following standards:

EN-ISO 9001: 2008 Quality management systems - Requirements

Subject product is:

- In compliance with the essential requirements of the specific product legislation:

- **EMC** **Directive 2004/108/EC**

by applying the following standards:

IEC 61326-1: 2006 Class A Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements.

IEC 61326-2-3: 2006 Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-3: Particular requirements – Test configurations, operational conditions and performance criteria for transducers with integrated or remote signal conditioning.

- **LVD** **Directive 2006/95/EC**

by applying the following standards:

IEC 61010-1: 2010 Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements.

- **Pressure Equipment** **Directive 97/23/EC (PED)**

As amended by Regulation (EC) no. 1882/2003, by applying:

Article 3.3: Sound Engineering Practice

- **RoHS** **Directive 2011/65/EU**

by applying:

Category 9: Industrial monitoring and control instruments, ion selective electrode

- **Explosive atmospheres** **Directive 94/9/EC (ATEX)**

As amended by Regulation (EC) no. 1882/2003, by applying the following standards:

EN 60079-0: 2009 Explosive atmospheres – Part 0: Equipment – General requirements

EN 60079-11: 2007 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "I"

EN 60079-26: 2007 Explosive atmospheres – Part 26: Equipment with equipment protection level (EPL) Ga

The provisions fulfilled are:  II 1 G Ex ia IIC T3...T6 Ga

Number of the EC-type Examination Certificate: **DEKRA 11 ATEX 0064 X**

Name of the notified body: DEKRA Certification B.V.

Identification number of the notified body: 0344

Address of the notified body: Meander 1051, 6825 MJ Arnhem, The Netherlands

- Produced according to appropriate quality control procedures.

The CE-mark has been affixed on the product in 2013 for the first time.

Amersfoort, 01 January 2014

H. Leijten
General Manager
Yokogawa Process Analyzers (YPA)
Yokogawa Europe B.V.



Annex-1

Model Code	Suffix Code	Option	Description
SC25F			SENCOM™ pH Sensor: pH, REF, LE, Temp.
sensor type	- AGP25		General purpose model
	- ALP25		High temp. chemical resistant model
sensor length	-120		120mm
	-225		225mm

10. CHEMICAL COMPATIBILITY CHART

		Conc. %	Temp. °C	Material																			
				Viton			Ti			PTFE (teflon)			PPS (Ryton)			Glass							
				20	60	100	20	60	100	20	60	100	20	60	100	20	60	100					
Inorganic acid	Sulfuric acid	10	O	O	O	-	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
		50	O	O	O	-	-	-	O	O	O	X	X	X	O	O	O	O	O	O	O	O	O
		95	O	O	O	-	-	-	O	O	O	X	X	-	O	O	O	O	O	O	O	O	O
		fuming	O	O	O	-	-	-	O	O	O				O	O	O	O	O	O	O	O	O
	Hydrochloric acid	10	O	O	O	-	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
		sat.	O	O	O	-	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Nitric acid	25	O	O	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
		50	-	-	-	O	O	O	O	O	O	X	X	X	O	O	O	O	O	O	O	O	O
		95	-	-	-	O	O	O	O	O	O	-	-	-	O	O	O	O	O	O	O	O	O
		fuming	-	-	-				O	O	O				O	O	O	O	O	O	O	O	O
	Phosphoric acid	25	O	O	O	X	X	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
		50	O	O	O	X	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
95		X	X	-	X	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
Hydrofluoric acid	40	O	O	O	-	-	-	O	O	O	X	X	X	X	X	X	X	X	X	X	X	X	
	75	O	O	X	-	-	-	O	O	O	-	-	-	-	-	-	-	-	-	-	-	-	
Organic acid	Acetic acid	10	-	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
		glacial	-	-	-	O	O	O	O	O	O	O			O	O	O	O	O	O	O	O	
	Formic acid	80	-	-	-	X	X	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Citric acid	50	O	O	O	X	X	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
Alkali	Calcium hydroxide	sat.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Potassium hydroxide	50	O	O	O	O	X	-	O	O	O	O	O	O	O	O	O	O	O	O	O	X	
	Sodium hydroxide	40	X	X	X	X	X	-	O	O	O	O	O	O	O	O	O	O	O	O	O	X	
	Ammonia in water	30	X	X	X	X	X	-	O	O	O	O	O	O	O	O	O	O	O	O	O	X	
	Ammonium chloride	sat.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
Acid salt	Zinc chloride	50	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Iron(III) chloride	50	O	O	O				O	O	O	O			O	O	O	O	O	O	O	O	
	Sodium sulfite	sat.	-	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
Basic salt	Sodium carbonate	sat.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Potassium chloride	sat.	O	O	O	O	O	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Sodium sulfate	sat.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Calcium chloride	sat.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
Neutral salt	Sodium chloride	sat.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Sodium nitrate	50	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Aluminium chloride	sat.	O	O	O	O	O	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Hydrogen peroxide	30	O	O	O	O	O	O	O	O	O	O	X	-	-	O	O	O	O	O	O	O	
Oxidizing agent	Sodium Hypochlorite	50	O	O	X	X	-	-	O	O	O	X			O	O	O	O	O	O	O	O	
	Potassium dichromate	sat.	O	O	O	O	O	O	O	O	O	X			O	O	O	O	O	O	O	O	
	Chlorinated lime										O	O	O								O	O	O
	Ethanol	80	X	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Organic solvent	Cyclohexane		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Toluene		-	-	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Trichloroethane		X	X	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
	Water		O	O	O	O	O	O	O	O	O	X	O	O	O	O	O	O	O	O	O	O	O

O = can be used; X = shortens useful life; - = cannot be used; Blank = no data available

Note: Information in this list is based on our general experience and literature data and given in good faith.

However Yokogawa is unable to accept responsibility for claims related to this information.

YOKOGAWA ELECTRIC CORPORATION**World Headquarters**

9-32, Nakacho 2-chome, Musashino-shi
Tokyo 180-8750
Japan
www.yokogawa.com

YOKOGAWA CORPORATION OF AMERICA

2 Dart Road
Newnan GA 30265
USA
www.yokogawa.com/us

YOKOGAWA EUROPE BV

Euroweg 2
3825 HD AMERSFOORT
The Netherlands
www.yokogawa.com/eu

YOKOGAWA ELECTRIC ASIA Pte. LTD.

S Bedok South Road
Singapore 469270
Singapore
www.yokogawa.com/sg

YOKOGAWA CHINA CO. LTD.

3F Tower D Cartello Crocodile Building
No.568 West Tianshan Road Changning District
Shanghai, China
www.yokogawa.com/cn

YOKOGAWA MIDDLE EAST B.S.C.(c)

P.O. Box 10070, Manama
Building 577, Road 2516, Busaiteen 225
Muharraq, Bahrain
www.yokogawa.com/bh

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